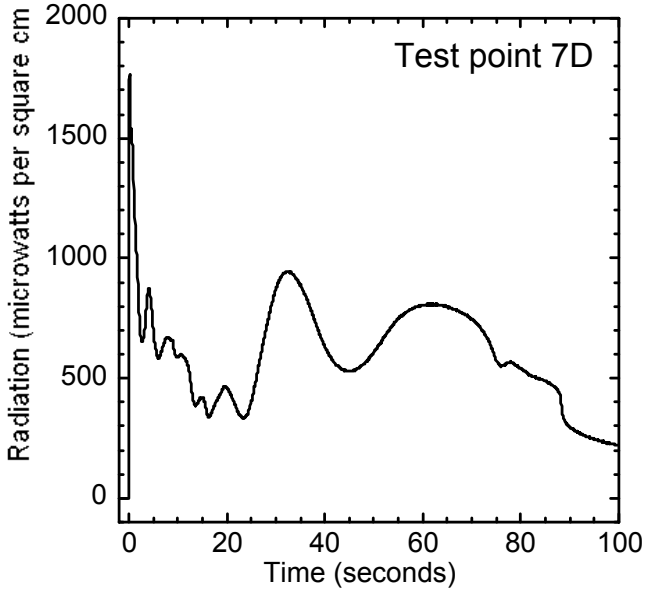
MSG 176 - RED FD12 CM2 SOFBALL SUMMARY

Note from Paul Ronney, CM-2/SOFBALL PI, to the STS-107 crew

On behalf of the entire SOFBALL science team and the CM-2 engineering team, I would like to thank the STS-107 crew for the tremendous effort they put into making SOFBALL such a huge success. This includes not only the payload crew that performed the tests but also the orbiter crew that supplied the necessary free drift conditions. A total of 39 tests were performed in 15 different mixtures, resulting in a total of 55 flame balls, of which 33 had names. The total burn time for all flames was 6 $^{1}/_{4}$ hours. Among the accomplishments of the experiment were the weakest and leanest flames ever burned, either in space or on the ground, and the longest-lived flame ever burned in space. Several totally new results were found, for example oscillating flame balls (see plot below) that were predicted theoretically years ago but heretofore never observed experimentally. The data obtained during the mission will keep combustion scientists busy for many years to come and will help lead to the development of cleaner, more fuel-efficient engines as well as improved methods for spacecraft fire safety assurance.



Radiometer signal showing flame ball oscillations

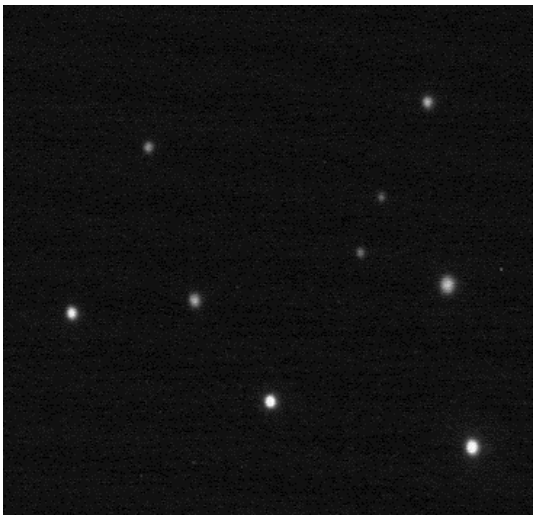


Image from last test point. (Until post-mission tapes are available we won't be able to identify "Kelly").

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